



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8  
999 18<sup>TH</sup> STREET - SUITE 500  
DENVER, CO 80202-2466

### PROGRESS POLLUTION REPORT

Weld County Waste Disposal Site  
Unincorporated Weld County, Colorado

#### I. HEADING

Date: **10/01/99**  
Site Name: Weld County Waste Disposal  
From: **Johanna Miller, OSC**  
To: Patty Smith, EPA Headquarters  
POLREP No.: **POLREP #2**

#### II. BACKGROUND

Site No.: 9T  
Response Authority: CERCLA  
Action Memorandum: September 25, 1998  
**Amended Action Memo: September 24, 1999**  
Start Date : October 20, 1998  
Demobilization Date: TBD  
Completion Date: TBD

#### III. SITE INFORMATION

##### A. Incident Category

Time-Critical, Fund-Lead, Removal Action

##### B. Site Description

###### 1. Site Location

The Site is located approximately 4 miles from Ft. Lupton, Weld County, Colorado.

###### 2. Site Characteristics

The Site is a former oil field brine waste disposal facility operated as a solid waste facility **under a Special Use Permit issued by Weld County**. It is in unincorporated Weld County, but there are approximately 20 private drinking water wells downgradient from the facility, ranging in depths from 70 feet to over 800



feet. The area has potential for new construction and there is a probability that residences will be built in the vicinity of the Site in the near future.

### 3. Description of Threat and Evaluation

Approximately three years ago, The Environmental Protection Agency (EPA), Region VIII, issued a 7003 Order under the Resource Conservation and Recovery Act (RCRA) to Amoco and HS Resources, based on concerns about high total dissolved salts (TDS) and benzene-toluene-ethylbenzene-xylene (BTEX) in groundwater at the Site. As part of the investigation performed by those parties, halogenated organic solvents were detected in soils and groundwater at the Site and a minimum of 3/4 mile downgradient from the facility. The hazardous substances identified, and the vertical depth at which they were found may be unrelated to the disposal activities of Amoco and HS Resources. It was suspected that these chlorinated compounds were disposed of into a disposal cell, referred to as Pond E, that was the buried and then subsequently covered by oilfield wastes. Pond E is evident in historical photos and according to records was covered by October, 1979. There was further concern that chlorinated organics had been disposed of in the Former Receiving Pond which was also evident in historical photos.

The chlorinated organics detected include PCE, TCE, and their breakdown products, including vinyl chloride. The highest concentrations detected in on-site soils were in an interval 6.5 to 8.5 feet below ground surface. Total organic solvent concentrations were approximately 2,000 parts per million (ppm) in soils. The maximum vinyl chloride concentration in groundwater (87 ug/L; MCL 2 ug/L) was detected at the facility boundary. Chlorinated compounds have been detected at lower concentrations in groundwater 50 feet below ground surface.

## IV. RESPONSE INFORMATION

### A. Situation

#### 1. Investigation

During the week of July 20-25, 1998, Environmental

Response Team (ERT) and their contractor (Weston) conducted extensive soil sampling at the site. The soil samples were collected in the Former Receiving Area (3 probes), Pond B Area (3 probes), Pond D (7 probes), Pond E (2 bores) and east of Pond D's berm (4 probes). Slotted PVC casing was placed in the latter four probes and in one probe within Pond E.

Water samples were collected in the five cased holes, four area drinking water wells, and in eight older shallow holes which are approximately  $\frac{3}{4}$  mile down-gradient from the site. **High levels of chlorinated compounds were detected under and immediately downstream from Pond E. Low levels of 1,1 DCA, TCE and PCE were detected at one residential well but because some of the internal laboratory standards were outside normal operating ranges the values reported are considered estimated.** On September 8, 1998, CDPHE duplicated EPA's residential well sampling and confirmed the presence of low levels (below drinking water standards or other health advisories) of 1,1 DCA and TCE (at 0.67 ppb) in this one well. They also detected low levels of cis 1,2-DCE. This well is reported to be 200 feet deep but no information is available regarding the screened intervals.

## 2. Removal Actions to date

On October 20, 1998, EPA mobilized its Environmental Response Contractor, CET Environmental Services (CET), to the site to develop preliminary plans for implementation of the thermal treatment remedy. The contractor began making arrangements to secure power, water, and on-site trailers and began developing plans for excavation, dewatering, and subcontracting for thermal treatment services. On January 13, 1999, CET excavated a series of nine test pits in Pond E to estimate the volume and physical characteristics of material to be treated. Based on visual observations, it was estimated that Pond E and the former receiving area contained approximately 24,500 cubic yards of waste/contaminated soil.

On January 27, 1999, CET solicited proposals and formal bids from nine firms to implement the thermal treatment process. Three firms submitted bids by the due date of March 12, 1999. Given the estimated volume of

soil to be treated, the lowest bid received was \$4.9 million for the desorption process. This figure was well in excess of the original project ceiling of \$3.6 million and did not include additional costs for site preparation, dewatering, and excavation.

The original Action Memorandum also called for installation of a reactive barrier passive groundwater treatment system to treat contaminated groundwater as it moves away from the source area. During February 8-18, 1999, the REAC contractor performed an investigation of the hydraulic properties of the contaminated unconsolidated aquifer to determine the appropriate design for such a system. The investigation included installing 6 monitoring wells in the area of the proposed treatment wall and conducting slug tests and pump tests to determine aquifer yield and hydraulic conductivity. The testing showed that the surficial aquifer is very heterogeneous and that the primary groundwater conduit, the lower sand and gravel, is very thin. The report concluded that a reactive barrier wall would not be the optimum treatment method for this ground water system.

Because the costs associated with the specified thermal desorption process exceeded the project ceiling and the reactive barrier was determined to be technically infeasible, EPA determined that it was necessary to conduct additional investigations prior to proceeding with the removal action. The goal of the additional investigation was to more accurately characterize the contaminant levels, physical properties and volumes of materials to be removed.

On June 2-3, 1999 EPA's contractors, CET and URS Operating Systems, Inc. (UOS), excavated a series of test trenches across Pond E to determine the aerial and vertical extent of stained soils representing the boundaries of Pond E. In addition, 46 samples were collected from specific depths and contaminant layers and analyzed for total VOCs and for the RCRA characteristics. Much of the material disposed of in Pond E was oil field wastes which are heavily stained and easy to discern visually. One of the main goals of this sampling was to determine if particular layers within Pond E contain the chlorinated organics which are the focus of this removal

action.

Based on this sampling, Pond E is estimated to be 300 feet wide by 300 feet long and extends slightly east and south from the area flagged by LTE. The chlorinated VOC contamination in Pond E does not follow predictable patterns but is distributed randomly among the visible oil field wastes, although concentrations of chlorinated VOCs in the central and southern portion of Pond E were consistently higher. It is estimated that Pond E contains approximately 25,000 cubic yards of impacted soil based on visual staining. Eight samples with the highest concentration of chlorinated VOC's were submitted to the laboratory for TCLP (toxicity characteristic leaching procedure) analysis. Only one of the eight samples exceeded any of the TCLP limits.

Based on this information, EPA developed a different approach to the removal action as described in the "Planned Removal Actions" section below.

### 3. Planned Removal Actions/Next Steps

Based on the data and information collected between September 25, 1998 and July, 1999, EPA signed an amended Action Memorandum on September 24, 1999 to amend the scope of the removal action. EPA plans to accomplish the following activities during the Removal Action:

- Excavation of Contaminated Soils in Pond E and the Former Receiving Area: Prior to excavation, a compacted clay pad will be constructed to stage the contaminated soil. Soils will be excavated and stockpiled in 500 to 1000 ton increments and stockpiles will be kept separate for disposal characterization and profiling. Soil stockpiles will be covered and/or treated to minimize dust generation and odors. Perimeter air monitoring will be performed during the excavation process. The overall extent of excavation will be based on visual observation and chemical analysis. It is estimated that Pond E and the Former Receiving Area contain approximately 26,800 cubic yards of impacted soil based on visual staining. Site-specific cleanup goals have been developed based on

risk to groundwater and a residential exposure scenario. Confirmation samples will be collected at the base and sides of the excavation to assure that soils exceeding the clean-up goals have been removed.

- Dewatering of Soils and Excavation: Stockpiled soils will be placed on the clay pad which will be designed to drain water to a centralized sump. This water and water that accumulates in the excavation will be treated on site and used for dust control or disposed of off-site.
- Characterization Sampling: Composite samples will be collected from each stockpile to determine average concentrations of contaminants and RCRA characteristics.
- Disposition of Soil Stockpiles: Soils with contaminant concentrations below the site specific clean-up goals will be returned to the excavation. Soils with *de minimus* levels of contaminants that are determined to not contain a hazardous waste will be disposed of off-site at a permitted, off-site rule compliant facility. Based on preliminary sampling conducted in June of 1999, it is estimated that 21,000 cubic yards of soils will be disposed of off-site in this manner.
- Treatment of Higher Concentration Soils: Soils with concentrations above the *de minimus* levels established under the contained-in determination will remain stockpiled on-site. EPA will conduct an evaluation of alternatives to determine a feasible, effective and cost effective approach for treating/handling these remaining soils (approximately 5,800 cubic yards). Options to be considered include on-site soil vapor extraction, on-site thermal treatment (both direct and indirect fire), and off-site treatment. EPA will design and implement the feasible option identified through the alternatives analysis.
- Groundwater Assessment: EPA will conduct additional ground water assessment studies to

determine the need to initiate further actions to protect downgradient ground water users after removal of the high concentration source. EPA will evaluate options such as collection and treatment of highly contaminated groundwater close to the source to keep it from migrating off the facility boundary and/or provision of a more permanent, protected water supply for certain residents. EPA will design and implement the feasible option identified through an evaluation of alternatives.

#### 4. Current Situation

On August 12, 1999, EPA issued a work assignment to perform the removal action to the US Army Corp of Engineers (COE) Rapid Response Contract under an Interagency Agreement (IAG). The COE awarded a contract to Roy F. Weston, Inc. Along with administering the response contract, the COE will assist EPA in the on-site oversight.

On September 8-10, 1999, in preparation for the staging pad construction, clean rain water accumulated in the corner of Pond D was pumped into a frac tank and spray irrigated over the empty field just south of Pond E. On September 13, 1999, additional crew was mobilized to the site. Some of the eastern berm around Pond D was dozed into the Pond D area to form a firm base for the clay staging pad. Clay was imported to the site the following week. The clay staging pad, consisting of a foot of clay, followed by a geotextile membrane, followed by a foot of native soil, was completed on September 30, 1999.

Pond E has been divided into 65' by 20' grids for the purpose of excavation. Excavation of Pond E commenced on September 30, 1999. Groundwater accumulating in the excavation is being pumped into a series of frac tanks.

#### C. Key Issues

High cost factors were a key issue but it appears that the alternative approach will remedy this problem.

V. COST INFORMATION

The budget which was established for this Removal Action is \$3,600,000.

VI. Disposition of Wastes

TBD